

WHAT IS CLAIMED IS:

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1. An information recording medium, comprising: a substrate; and a recording film for recording information on n layers (where n is an integer of 2 or more) provided opposite from a light-incident side, wherein when light is focused on the recording film on the j^{th} layer (where j is an integer that is equal to or larger than 2 while equal to or smaller than n, and not i), transmittance T_i (where i is an integer equal to or larger than 1 and yet equal to or smaller than n-1) of the i^{th} layer from the light-incident side of the recording medium fulfills

$$\prod_{i=1}^{j-1} T_i^2 \geq \frac{n-j+1}{n}$$

and the transmittance of the i^{th} layer changes when the light focuses on the recording film of the i^{th} layer.

2. An information recording medium, comprising: a substrate; and n layers of recording film provided opposite from a light-incident side, wherein the transmittance of the i^{th} layer fulfills

$$T_t \geq \sqrt{\frac{n-i}{n-i+1}}$$

when the light does not focus on the recording film of the i^{th} layer, and the transmittance thereof is equal to or less than 50% when the light focuses on the recording film other than the recording film of the i^{th} layer.

3. An information recording medium according to claim 1, wherein a nonlinear optical layer that changes transmittance depending on the focusing light is formed to the medium.

4. An information recording medium according to claim 3, wherein the transmittance of the nonlinear optical layer changed by the focused light returns to an original value during one disk revolution.

5. An information recording medium according to claim 3, wherein the nonlinear optical layer is formed of a thermochromic material.

6. An information recording medium according to claim 5, wherein the thermochromic material is a triphenylmethane dye.

7. An information recording medium according to claim 3, wherein the nonlinear optical layer is a layer containing at least one of oxide of Ti, V, Cr, Mn, Fe, Co, Ni, Cu.

8. An information recording medium according to claim 7, wherein the oxide is in contact with a metal or a semiconductor.

9. An information recording medium according to claim 3, wherein the nonlinear optical layer has a laminated structure having a first layer containing at least one of oxide of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, and a second layer of metal or semiconductor.

10. An information recording medium according to claim 8, wherein Fermi energy obtained by changing an optical property of the oxide of Ti, V, Cr, Mn, Fe, Co, Ni, or Cu by light irradiation is higher than Fermi energy of the metal or the semiconductor.

11. An information recording medium according to claim 3 wherein the nonlinear optical layer is a magnetic material.

12. An information recording medium according to
claim 11, wherein the magnetic material contains garnet.

13. An information recording medium according to
claim 11, wherein the magnetic material is a magnetic
semiconductor.

14. An information recording medium according to
claim 13, wherein the magnetic semiconductor contains Mn.

15. An information recording medium according to
claim 14, wherein the magnetic semiconductor containing Mn
contains at least one of O, S, Se, or Te.

16. An information recording medium according to
claim 13, wherein the magnetic semiconductor contains at
least one of Cd, Zn, Hg, or Pb.

17. An information recording medium according to
claim 3, wherein a metal film or a semiconductor film is
provided between the recording film and the nonlinear film,
and a thickness of the metal film or the semiconductor film
is equal to or more than 0 nm and equal to or less than 50nm.

18. An optical information recording medium, comprising: a substrate, a first recording film, and a second recording film in a sequence from a light-incident side, wherein a nonlinear film is provided between the substrate and the second substrate, the nonlinear film having reflectance higher than transmittance when the light focuses while having transmittance higher than reflectance when the light does not focus.

19. An optical information recording medium according to claim 18, wherein the nonlinear film is placed between the first recording film and the second recording film.

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